

1. A rocket plume detector through clouds comprising, a passive electro-optical sensor for detecting narrow band spectral emissions in a rocket engine plume through clouds, said sensor being mounted on an above-flying or orbiting platform.

10. The plume detector of claim 8 wherein said GPS receiver records the flight path of the detector platform.

REMARKS

Claims 1 – 15 are in the present application.

The Examiner is thanked for renumbering claims 6.5 – 14 to 7 – 15 on your own initiative.

The Office Action rejection of claim 9 as indefinite under 35 U.S.C. 112, second paragraph, in that it recites “photodetector” instead of --plume detector --, is respectfully traversed. This is because claim 9, as renumbered by the Examiner, is now claim 10. Accordingly, claim 10 has been amended in accordance with the objection to claim 9 recited in the Office Action. Thus it is believed that the above rejection is met.

The Office Action rejection of claims 1 – 9 and 11 – 15 as obvious under 35 U.S.C. 103(a) over Hill, Jr. et al (‘285) in view of Hasson (‘452), is respectfully traversed. That is, Applicants’ claims 1 et seq (as amended) recite a passive sensor for detecting plume emissions while Hill discloses and claims an active plume detecting system. That is, Hill repeatedly discloses and claims a stimulated emission wherein a laser beam is directed to an exhaust plume to stimulate the emissions thereof. See for example his Abstract, col. 3, lines 60 – 63, col. 6, line 59, claim 1 line 2, claim 2 lines 1 – 5 and claim 12 lines 8 and 9, for examples of such recitation or for an equivalent recitation.

The problem with stimulated emissions is that a laser beam is required, and it must be of high power, it must be aimed in the right direction, not only at a missile plume, but at the right part of the plume or it will fail to accurately detect such plume.

Also such a high-powered laser while perhaps portable in an aircraft, would be so heavy as to be impractical to launch in a satellite for orbital surveillance.

By contrast, Applicants' rocket plume detector, as claimed, is a passive system of relatively small size that can be readily transported in an aircraft or launched in a satellite. As it does not employ an active system such as a laser beam, it does not give its position away in detecting a missile or rocket plume, as is the case with an active plume detector such as disclosed by the Hill reference.

As for Hasson, his Figure 3 discloses the carrying of an electro-optic system 10 in an aircraft 102, as noted by the Office Action on page 4, lines 13 et seq. However, it does not aid the above rejection since the combination of Hill and Hasson merely suggests flying the active sensor of Hill with its drawbacks and distinctions discussed above, in an aircraft, which latter reference teaches a way from Applicants' passive rocket plume detector as defined in its above claims.

As to the rejection of claims 2, 4, 5, & 13 and 8 & 9, these claims are believed distinguished over the cited references, e.g., in view of their dependence from claim 1, as amended, which is believed distinguished over Hill et al, as discussed above.

The Office Action rejection of claim 10 as obvious under 35 U.S.C. 103(a) over Hill, Jr. et al ('285) as modified by Hasson ('452) and further in view of Houlberg ('571), is respectfully traversed. Likewise claim 10 is believed distinguished over the cited references, e.g., in view of its dependence from claim 1, as amended, which is believed distinguished over the Hill et al reference, as discussed above.

The prior art made of record and not relied upon is noted and is considered less pertinent to Applicants' claimed invention than are the above-applied references.

In view of the foregoing the claims of record, as amended, are believed distinguished over the applied art and in condition for allowance. Early notice of allowance is requested.

In accordance with Section 714.01 of the M.P.E.P., the following information is presented in the event that a call may be deemed desirable by the Examiner: Thomas C. Stover, (781) 377-3779.

Respectfully submitted,



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Marked-up version of claims to show changes made to above clean version.

Amend the following claims:

1. (Amended) A rocket plume detector through clouds comprising, [an] a passive electro-optical sensor for detecting narrow band spectral emissions in a rocket engine plume through clouds, said sensor being mounted on an above-flying or orbiting platform.

10. (Amended) The [photodetector] plume detector of claim 8 wherein said GPS receiver records the flight path of the detector platform.

Exhibit A